MERCHANDISING SUPPLEMENT
Electricity on the Farm

Vol. 3 APRIL, 1930 No. 4

Saving Time

From now on until mid-summer, the farmer's biggest problem will be that of saving time. Because farm work is so highly seasonal, help is needed by all farmers at approximately the same time, and during recent years it has become more and more evident that the hired help supply for the farm is rapidly diminishing.

For that reason the modern farmer must crowd into his day as much work as possible. The average day is so short for the progressive farmer, that unless he utilizes every practical labor-saving appliance he will find that he is very much limited in the size of crop he can handle.

In this connection, any appliance which saves him time, and makes it possible for him to put more hours into field work increases his earnings.

Electric service has cut down many of the time consuming tasks which formerly faced the farmer; for example, supplying water for live stock. It is estimated that an electric water system will save a farmer from one-half to a full hour per day. In saving time the water system is saving money for the farmer.

As with many other electrically operated appliances, water systems are right in season now. The farm equipment salesman has a mighty strong appeal to the average farmer for the installation of a water plant to eliminate the task of pumping water by hand and thus save so much more time for productive field work.

This question of time saving is one which should not be overlooked by salesmen contacting the farmer at this season of the year.

Stationary Spraying in the Middle West

By PROF. E. W. LEHMANN
University of Illinois

"NOTHING has come nearer to taking the grief out of spraying for me than the stationary outfit," stated Mr. D. E. Lewis, Manager of Stark Bros. Orchards of Louisiana, Missouri, before the Illinois State Horticultural Society at their December meeting. While this method is not a cure-all, it has certain advantages over portable spraying that should influence fruit growers to install this type of equipment instead of purchasing portable units, according to Mr. Lewis. He went so far as to venture the opinion that the orchardist could afford to go to his banker and borrow money if necessary to get such an outfit installed.

Of special interest to rural service men, who are interested in promoting new uses of electric power, Mr. Lewis stated: "Although we are now driving our stationary outfit with a gas engine, we feel sure that electric power is best." It is evident that the same advantages that electric power has for driving other machines apply also to this operation.

Experience Outlined

Mr. Lewis outlined the results of his two years' experience to the fruit growers of Illinois, and many practical questions were asked at the completion of his talk. Among other things, Mr. Lewis stated that "there is no loss of time with a stationary outfit installed and the spraying can be done at the proper time." The work is speeded up and it can be done with fewer men. There is practically no hard wear and tear on the machinery as is the case when the portable outfit is hauled around over rough ground.

Apparently the material can be as effectively applied with the stationary plant as with the portable machine and no more of the material is lost. The position of the operator with reference to the tree must be changed for different pressures for best results. For tall trees the sprav gun should be used.

The important thing to keep in mind when considering a stationary spray plant, according to Mr. Lewis, is to make a careful plan. He secured much valuable assistance from the manufacturers in planning the layout on the Stark orchard. To make a complete plan it is not only necessary to know the size of the orchard, arrangement of trees, and the topography, but also the number of men who will spray. The capacity of pump, as well as the size of pipe, are dependent on the number of gallons per minute that will be applied.

Dead-end System Favored

The laterals are usually ¾-inch pipe, the mains are 1¼-inch or 1½-inch. The piping system is either a circulating or a dead-end system. Mr. Lewis stated that he favored the dead-end system. The pipes are either placed overhead, on the surface of the ground, or under ground. The latter system has a good many advantages for a permanent installation. It is recommended that the pipe be put 15 to 18 inches deep when put under ground. One important factor is to provide adequate drainage; this means that at all low places in the distribution system a gate valve should be placed.

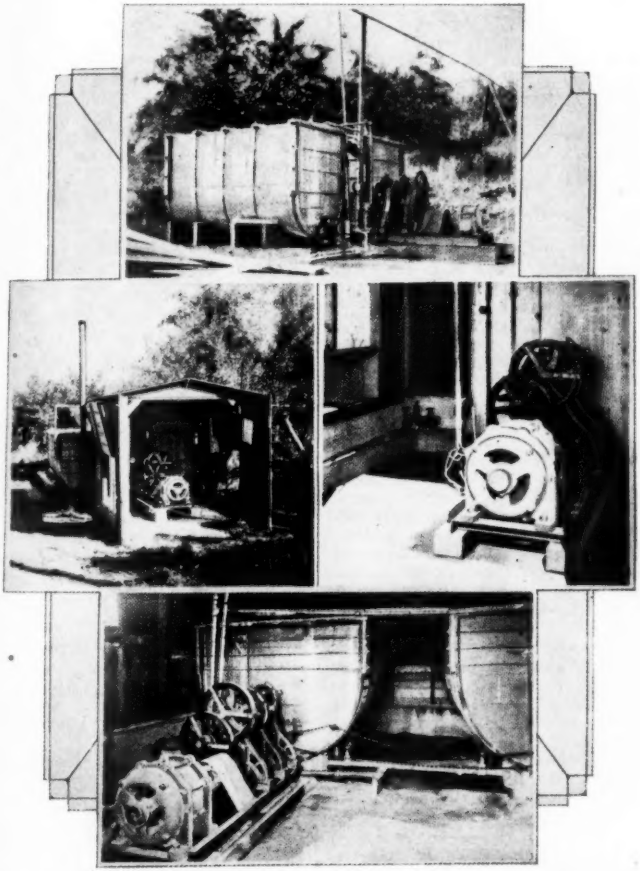
Hydraulic tables worked out for the friction loss in pipes for flow of water, while not the same for spray material, are satisfactory for all practical purposes in determining sizes of pipes for certain pressures and quantities of discharge. Practical experience dictates that with 400 to 450 pounds pressure maintained at the plant, the pressure at the different nozzles should

not be less than 225 to 250 pounds pressure.

Adequate uniform power is an important factor in successful operation of a stationary plant. Electric power lends itself to this type of service. The important benefits of this stationary spray equipment over the portable type is the saving of time and getting the work done at the right time irrespective of the condition of the fields. A constant, dependable source of power is essential.

Mr. Lewis stated that their saving in labor amounted to 45% and that last year, due to the peculiar weather conditions, they got the orchard sprayed when otherwise it would not have been sprayed, which resulted in a saving of one-third the crop, and it was of better quality than other fruit.

Stationary spraying is a rela-



Typical Spray Plant Outfits Such as Are Now in Service in the Middle Western States

tively new practice in the Middle West. A number of plants have been installed in New Jersey, according to Professor Gross in an article in the December issue of *Agricultural Engineering*. Probably the first man to use the stationary plant in Illinois was Mr. Frank Dirksmeyer of Calhoun County. This county is hemmed in between the Illinois and the Mississippi Rivers and a large part of its area is rather rough and broken. A part of Mr. Dicksmeyer's orchard, comprising about seven acres near Hamburg, is so steep it is almost impossible to use the ordinary spray outfit. He piped this orchard about four years ago, extending a 1½-inch main down the slope with two ¾-inch laterals to each side, the pumping unit being placed at the top of the hill. Mr. Dirksmeyer is well pleased with his results.

Another stationary spray plant which is giving excellent service in the Middle West is on the Coffin orchard near Veedersburg, Indiana.

The enthusiastic way in which the owners and operators of these stationary spray units talk about their equipment, and the interest that is shown by the fruit growers, is adequate evidence that this is another electric power application about which the rural service man must dig in and get the best information available.

Probably the best sources of information at present are the reports made by the Washington and the California Experiment Stations. A recent bulletin on Orchard Spraying and spray equipment published by the Virginia Experiment Station, although not a stationary plant bulletin, should be of interest in this connection. Several manufacturers of spray equipment have made exhaustive studies of the subject and their literature is a source of much information which will be helpful to the rural service man located in a fruit section.

Your wife is talking of going to France this summer. Have you any objections?"

"No, certainly not. Let her talk."—Wall Street Journal.

Expenses Reduced by Help of Electric Equipment

By J. C. SCOTT

THE installation of a milking machine cut the necessity of the services of one man on the C. J. Gaul dairy farm, near Nisqually, Washington, amounting to a net saving of $111.54 per month.

"I would quit the milk business," says Mr. Gaul, "if I had to go back to hand milking. In disposing of the services of the man who did the milking, I eliminated an expense of $120 a month,—$90 of which was salary and $30 board.

"The operating expense of the milker and water pump (both on the same meter) is $8.46 a month for current, leaving a net saving, really, of more than $111.54 per month on account of the electric milker."

The electric motor operates the pump on this farm, which supplies plenty of fresh drinking water for the cows at any time they want it, since the barn is equipped with drinking cups.

Many dairymen of Washington are reporting that the milk flow from their herds remains as high in winter as in spring, where the barns are equipped so the cows can get a drink at any time of day or night, and when the water is not too cold.

On Mr. Gaul's farm, as on many others, the electric pump is supplying cold water for the tubular cooler, so the milk can be properly cooled immediately after coming from the cow.

New Westinghouse Electric Service Plant

The most recent addition to the electrification of the farm is the Westinghouse Electric Service Plant. This plant has been developed to give the farmer a completely automatic sources of electric power which will render him the same type of service as a central station. Should the demand imposed on the plant exceed that of the battery, the generator automatically takes care of the load.

The plant is rated at 36 volts —750 watts and is made in four styles, being identical except for the size of the fuel tank.

The Human Side of Rural Electrification

By A. E. HALTERMAN
Rural Electrification Engineer, Ohio Edison Company

IN our program of Rural Electrification, much effort has been expended upon the material side and comparatively little effort has been applied to the psychological or educational side as it applies to the individual farmer. It seems to me that this is the connecting link and, I fear, a weak link in many cases between the mass of scientific information and the numerous appliances on the one side and the farmer himself on the other side.

Like all educational campaigns the methods used must fit the requirements in order to arrive at the desired goal, "complete electrification of the farms."

The rural service engineer working in the rural territory of a power company is the logical extension agent to conduct a continuous educational program in his territory, designed to create a receptive attitude among the consumers of the company, and to create confidence in the recommendations that he may make to the individual users from time to time. This man must be a man that will inspire confidence in himself on the part of his clientele. In order to do this he must be a farmer at heart with a background of farm experience and trained in scientific farming especially from the mechanical side, as well as a knowledge of human nature and the knack of getting along with rural folks. He should be interested in the farmer and try to help him and not to exploit him. All dealings should be mutually beneficial. The simple truth, explained clearly and patiently so that the farmer may be brought to see the problems the company has to face will bring about a better cooperation on the part of the farmer. High pressure sales methods will not bring best results. He should offer helpful suggestions continually and allow the farmer time to consider and weigh the matter and he will accept it if he can be shown the benefit of it. This method will prevent the injurious after results so often following the high pressure sales methods.

The rural man should be in complete charge of all rural contacts in his territory. Not that he can hope to attend to all the various jobs, but he should keep in touch with every process and iron out misunderstandings as they arise.

He must know his territory, the present and prospective users, the type and extent of the farming operations and the locations and proposed locations of lines so that he can discuss with intelligence any point without having to be on the ground to look it over. In order to do this it will be necessary to prepare maps and charts for his reference and make surveys of various important facts for his reference.

Points of Contact

The chief contacts with the farmer will be as follows: visits to the farms, newspaper articles, distribution of the magazine *"Electricity on the Farm"* and various contacts through the rural organizations, The Grange, Farm Bureau, Farmers' Institute, farmers' picnics, boys' and girls' clubs, rural schools and departments of vocational agriculture. The county agent should be aided in his program whatever it may be. All of these organizations can be used as a means of educational contact for talks, demonstrations, distribution of literature, etc. Usually any problem of general importance to several farmers may be handled easily through the medium of one of these organizations. This program will establish greater confidence in the power Company since it means that

(Continued on page S 14)

Increasing the Farm Wife's Desire for Electricity in the Home

By J. R. WILTON

WE shall grant that 99 per cent of the farm women desire modern conveniences, such as electricity in the home and all that it brings. The desire to possess these conveniences may be increased by sales talks and by pictures to a point where the woman of the house will have much to say to her husband regarding immediate purchase of a lighting plant. But it goes without saying that the opportunity to see these appliances, to see lighting fixtures in an electrical shop may be more potent than pictures and sales talks.

Create a Desire

The situation is comparable to the desire for certain foods—popcorn, for example. One may visualize a pan full of snow white popcorn; he may see a picture of it; he may be told of it, but none of these elements are half so powerful a sales argument as the actual smell of the product.

C. H. Parker & Son, Denver, Colo., are dealers and distributors for farm lighting equipment. While it is true that a great many of the sales are made right in the farmer's parlor or kitchen with nothing more than a catalogue to show the pictures and the conveniences of such equipment, still there are many ranchers in the vicinity of Denver who do not hesitate to motor into town and to visit the company's sales room to discuss farm lighting.

Besides having a few generators on display, the company has gone to the extent of arranging an attractive display of lighting fixtures —chandeliers, candelabra, drop lights and other such fixtures, suspended from a pergola-like rack—and also a display of appliances, such as sweepers, irons, etc.

We shall grant that these articles are for sale—at least they are the samples from which the actual sales are made. But we believe that the greatest value of such a display lies in its ability to increase the farmer's desire to possess them, and to possess them he must possess the mechanical unit which makes the use of the appliances and fixtures possible. Mrs. Farmer is more impressed with the display than her husband, for she is interested in the home and the beauty of the furniture and decorations in it.

The lighting unit is not in itself a thing of great beauty. In fact, it probably will be set up in the basement, in the barn or in some out-house so that if it were a thing of beauty it would not shed its beauty over the rooms of the house. She sees in a farm lighting system the pretty chandeliers in each room, the brilliant, nickel-plated electric iron, the shiny parts of the electric sweeper, etc.

There is no question but what actually seeing the appliances and the fixtures increases many a farm wife's desire to possess and determination to demand them of her husband.

The moral of this tale is: Get a few fixtures and appliances to add beauty to the display of farm lighting equipment in your sales room.

If you want business you must be willing to go out and look for it. If you want something and want it real bad and are willing to *work* for it—then no one can keep you from getting it. Unless you are willing to plan and work for it, you are not deserving of it and will not have it.

Nothing Equal to Demonstration in the Sale of Equipment

By WILLIS PARKER

THE salesman who has a portable farm lighting outfit on his roadster certainly has an advantage over the salesman who depends largely upon the catalogues and pictures to put over the message relative to the convenience and practicability of his appliance. They tell the story of a salesman who, while making a demonstration at one farm home, discovered that the barn on the neighboring farm was afire. He discerned it before the fire had made much headway, so he jumped into his car and rushed his electric light outfit and pump to the farm, dropped the intake hose into the well, started his outfit going ond kept the blaze under control until additional help could arrive and put out the fire. It was such a wonderful demonstration of the efficiency of his outfit that the farmer, in gratitude for the service the salesman had rendered, immediately signed an order for an outfit for his place.

Demonstrations Reduce Sales Resistance

It is impossible to experience many similar "made to order" sales and demonstrations, but the salesmen may always be on the lookout for an opportunity to demonstrate in a most practical way the efficiency of his plant, according to A. T. Padan, plant dealer at Denver, Colo., in a discussion of ways and means of reducing sales resistance.

We were comparing salesmanship to the conducting of electricity from one terminal to another. As all who are familiar with electricity know, there must be a good connection between the positive and negative poles if the current is to flow freely from one to the other. The finer the quality of the material in the connecting link and the more securely is the connection made at either end, the less resistance to the passage of the electricity is offered and therefore the less energy is wasted.

The Connecting Link

In salesmanship there is a connecting link—or there should be—between the salesman and the customer. The customer, as a rule, is negative while the salesman is positive. The finer the quality of the connecting link between salesmen and the customer and the more securely is the connection made at either end, the more freely will the sales talk pass from the positive to the negative side and the less energy will be expended in concluding the transaction.

As Mr. Padan admits, the best sales resistance reducing factor is a demonstration of the practicability of the plant and its accessory appliances at a time when the need for its services is most apparent. For example: suppose the salesman visits a farm home during a severe dry spell, drops the intake hose into the well, starts up his plant and proceeds to water the flower bed or a portion of the garden; isn't it quite likely that the farm wife will be favorably impressed?

In most instances farm light plant salesmen make demonstrations after appointments have been made. Securing an appointment for a demonstration is not always a sales resistance reducer. In fact, in many instances a cer-

tain amount of resistance is built up by the fact that the prospect knows that the demonstration is for the purpose of selling him a plant and therefore he feels that it is his privilege to find as many negative points as possible in an effort to resist the positive points produced by the salesman. Sometimes the farmer's attitude, when the salesman asks for a demonstration, is: "Sure, come ahead, but that's no sign I'm going to buy a plant."

Under such conditions, the salesman might as well realize in the beginning that resistance will be offered and he must work all the harder to overcome it.

"Service" Best Demonstration

How much better it might be to drive into the farmer's yard, proceed to accomplish some useful service with the plant and its accessory appliances! Such a method arouses curiosity, which, in turn, begets interest and attention, and they in turn reduce sales resistance, especially when the spectators sees the accomplishment of a bit of useful work under way.

However, it is quite probable that this form of demonstration will be more difficult to perform inasmuch as it will take considerable watchfulness to determine the exact hour that the performance of a useful service under such conditions could be had.

Activity of some sort always is a good sales resistance reducer inasmuch as activity gets attention and interest. The development of modern types of radio receiving sets that will operate well from farm lighting plants offers another avenue through which interest in farm lighting plants and electrical appliances may be secured. Hence we may expect the salesman to provide musical entertainment for his prospects, which will bring just one more of the human senses—the hearing—into the sales picture. Heretofore the sense of sight has been the principal medium by which the efficiency of such plants and appliances have been demonstrated. Now, with the radio as an accessory appliance, an appeal may be made to the ear and it is not unlikely that sales that could not be made as a result of an appeal to the sight will be possible through the assisting medium—the sense of hearing.

Hall Electric Opens Atlanta Office

The Hall Electric Company, an associate of the General Electric Company, with general offices in Philadelphia, announce the appointment of Rawson Collier as manager of their newly opened Atlanta office.

Mr. Collier is a graduate of the Massachusetts Institute of Technology and has been identified with engineering and public utility organizations for thirty years.

Battery Manufacturers Meet in Chicago

The National Battery Manufacturers' Association announce a tentative program for their convention to be held at the Sherman Hotel, Chicago, Ill., April 24 and 25, 1930. Topics listed for discussion are: Current Business Status, by a Chicago banker; Lower Insurance Costs, by G. F. Brown of G. F. Brown Company; What is the Battery Dealer Thinking About? H. G. Moock, of Moock, Lewis & Ballard; Modern Trends in Materials Used by the Battery Manufacturer, by representatives of manufacturers in the battery material field; The Question Box; Current Problems in Merchandising, by J. O. McKenzie, of J. O. McKenzie & Company, etc.

Double Diagnosis

"How's your car running?"

"Not so good. I can't keep it throttled down."

"How's your wife?"

"Oh, she's about the same."

Way Out West

"My father was a great Western politician in his day."

"What did he run for?"

"The border."

Bob's Page

Devoted to Merchandising of Electrical Equipment in Rural Communities

Conducted by Robt. J. Fulton

What Is Electricity?

Electricity is best understood by considering it as a form of energy —a medium for the transmission of power. Other forms of energy are heat, light, the chemical energy of coal, wood and gas, and the energy of moving bodies such as rivers, etc.

Energy can be transferred from one point to another. Heat can be sent through pipes as hot air or as steam. Electricity can be transferred from one point to another by means of metal circuits. To make this point clearly understood, several mechanical comparisons will be given.

In the first case, suppose two pulleys are placed a short distance apart, and it is desired to drive one from the other. (See Fig. 1.) The usual way of accomplishing this is to place a belt upon the two pulleys. When the pulley "A" is caused to turn, the pulley "B" will be driven by the belt as it passes from "A" to "B" on one side and returns on the other.

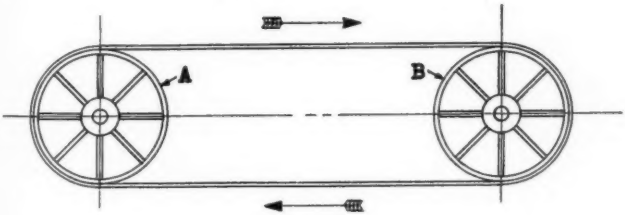


Fig. 1

Another illustration is that of a system in which water is the medium used to transmit the energy from one point to another. (See Fig. 2.) "A" is a rotating pump, "C" and "D" the pipes and "B" a water motor. This whole system is filled with water. When the pump "A" is caused to rotate, water will be forced through the pipe "C," through the water motor "B," causing it to rotate, and return to the pump through the pipe "D." In this case the water serves the same purpose as the belt in "Fig. 1" and by its circulation or flow carries the power from the pump to the water motor.

Now using Fig. 2 again, suppose "A" represents a generating machine. "C" and "D" the wires, and "B" the electric motor. This will be the method of transmitting energy electrically. When generator "A" is caused to rotate, it causes a current of electricity to flow from the generator through the wire "C" and through the motor "B" and to return to the generator through the wire "D." In this case, the electric current acts the same as the belt and the water in Figs. 1 and 2, transmitting the energy from the generator to the motor.

A number of theories have been given to try to explain the nature of electricity. You do not have to study these theories for a practical knowledge of electrical apparatus. The *action* of electricity can be clearly explained by considering it to be a fluid, and electric current a fluid in motion, or, in other

words, by comparing electric apparatus to water systems.

The pump corresponds to the generator, the pipes to the wires, the water motor to the electric motor, and the water to the electricity. Therefore if you study the relations governing the transmission of energy by means of water, then it will be easy to understand the relations which exist in the electric system.

In Fig. 2 the pipe through which the water flows from the pump may

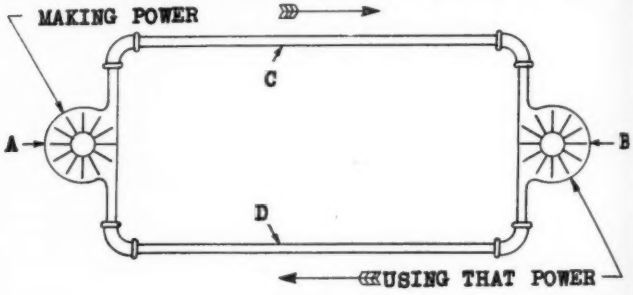


Fig. 2

be considered as the positive pipe. The same may be said of "C" and "B" as wires connecting the generator "A" to the motor "B." The terms "negative" and "positive" do not mean that the respective wires carry different kinds of electricity or water, but only indicate the direction of flow. The positive wire is considered as the path of the current from the generator and the negative wire is the path of the current returning to the generator.

In mechanics there are two ways of transmitting power from one point to another. First, where the parts of the machine travel continuously in one direction like a belt, and second, where the parts have a backward and forward movement like the piston of a steam engine and its connecting rod. Likewise, there are two ways of transmitting power electrically. First, where the current flows continuously in one direction, which is Direct Current. Second, where the current flows back and forth and is called Alternating Current. The terms "cycle," "alternation" and "phase" are used only in alternating current.

All substances conduct or transmit electricity to some extent, but their conducting power varies greatly. All metals are good conductors, and copper, being one of the best, is used as material for wire. Insulators serve to keep the electric current in the conductors, which they support or surround. The best insulators are glass, porcelain, mica, rubber and silk.

Harsh Treatment

He had choked her. She was dead—there could be no doubt about that. He had listened to her dying gasp.

Now she was cold—cold as the hand of death. Yet in his anger he was not convinced. Furiously he kicked her; with all his strength he shook her. To his amazement she gasped, trembled throughout the body and began to hum softly.

Jumping into the seat, grabbing the steering wheel and giving her gas, he arrived at the fire house only five minutes late and Lizzie was as well as ever again.—California Fireman.

The teacher was giving a lesson on the creation. Johnny interrupted with the remark: "My father says we are descended from apes."

And the teacher replied, "Your private family matters have no interest for the class."

"Won't you give something to the 'Old Ladies' Home'?"

"Sure—you can have my mother-in-law."

DIRECTORY

of Manufacturers of Electrically Operated Farm Equipment

Below is given an additional name to be added to the listings in the March issue. The name was inadvertently omitted from the tabulation.

Automatic Water Systems

Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

And the following is a continuation of the directory as inaugurated in the January issue:

Table Appliances

(Continued from March)

Manning-Bowman & Co., Meriden, Conn.
National Stamping & Elec. Wks., Chicago, Ill.
Proctor & Schwartz Elec. Co., Cleveland, Ohio
Robeson Rochester Corp., Rochester, N. Y.
Rock Island Mfg. Co., Rock Island, Ill.
The Silex Co., Hartford, Conn.
Swartzbaugh Mfg. Co., Teledo, Ohio.
Waage Elec. Co., Chicago, Ill.
Westinghouse Elec. & Mfg. Co., E. Pittsburg, Pa.
White Beauty Elec. Co., Inc., Chicago, Ill.

Vacuum Cleaners

Apex Elec. Mfg. Co., Cleveland, Ohio
Atwood-Stewart Vac. Mach. Co., Chicago, Ill.
Birtman Elec. Co., Chicago, Ill.
Brower Mfg. Co., Quincy, Ill.
Clarke Sanding Mach. Co., Chicago, Ill.
Cinderella Wash. Mach. Co., Cleveland, Ohio.
Clements Mfg. Co., Chicago, Ill.
Day Fan Elec. Co., Dayton, Ohio.
Edison Elec. Appliance Co., Chicago, Ill.
Elec. Vacuum Cleaner Co., Cleveland, Ohio.
Eureka Vacuum Cleaner Co., Detroit, Mich.
Federal Elec. Co., Chicago, Ill.
The Fitzgerald Mfg. Co., Torrington, Conn.
Foldex Mfg. Co., Detroit, Mich.
General Elec. Co., Bridgeport, Conn.
Graybar Elec. Co., New York, N. Y.
Hamilton Beach Mfg. Co., Racine, Wis.
Hoover Co., North Canton, Ohio.
Hurley Mach. Co., Chicago, Ill.
Landers, Frary & Clark, New Britain, Conn.
Metal Specialties Mfg. Co., Chicago, Ill.
The Morrow Co., Inc., Chicago, Ill.
National Stamping & Elec. Works, Chicago, Ill.
The Regina Co., Rahway, N. J.
The Standard Vacuum Cleaner Co., Cleveland, Ohio.
B. F. Sturtevant Co., Boston, Hyde Park, Mass.
The Torrington Co., Torrington, Conn.
United Elec. Co., Canton, O.
Westinghouse Elec. & Mfg. Co., E. Pittsburg, Pa.
Wise-McClung Corp., New Philadelphia, Ohio.
M. S. Wright Co., Worcester, Mass.

Washing Machines

Altorfer Bros. Co., Peoria, Ill.
Apex Elec'l Mfg. Co., Cleveland, Ohio.
At Last Co., Perry, Iowa.
Auto. Elec. Washer Co., Inc., Newton, Iowa.
Barlow & Seelig Mfg. Co., Ripon, Wis.
The Barton Corp., West Bend, Wis.
Birtman Elec. Co., Chicago, Ill.
Blackstone Mfg. Co., Jamestown, N. Y.
The Boss Wash. Mach. Co., Cincinnati, Ohio.
Brammer Wash. Mach. Co., Davenport, Ia.
Cinderella Wash. Mach. Co., Cleveland, Ohio.
Clarinda Mfg. Co., Clarinda, Ia.
The Coffield Washer Co., Dayton, Ohio.
Conlon Corp., Chicago, Ill.
Cope-Swift Co., Detroit, Mich.
Crystal Company, Inc., Detroit, Mich.
The Dayton Washer Co., Dayton, Ohio.
Eden Appliance Co., New York, N. Y.
Fairbanks-Morse Co., Chicago, Ill.
Federal Elec. Co., Chicago, Ill.
The Foote-Burt Co., Cleveland, Ohio.
Gainaday Elec. Co., Pittsburgh, Pa.
Getz Power Washer Co., Morton, Ill.
Geyser Elec. Co., Chicago, Ill.
Graybar Elec. Co., New York, N. Y.
Grinnell Washing Machine Co., Grinnell, Iowa.
Haag Bros. Company, Peoria, Ill.
Hoe Corp., Poughkeepsie, N. Y.
Horton Mfg. Co., Ft. Wayne, Ind.
Hurley Mach. Co., Chicago, Ill.
Kohler Co., Kohler, Wis.
Landers, Frary & Clark, New Britain, Conn.
The Laundryette Corp., Cleveland, Ohio.
The Maytag Co., Newton, Iowa.
The Meadows Mfg. Co., Bloomington, Ill.
Modern Laundry Mach. Mfg. Co., Chicago, Ill.
The Morris Mfg. Co., El Reno, Okla.
Ninteen Hundred Washer Co., Binghamton, N. Y.
One Minute Mfg. Co., Newton, Iowa.
Pine Ihrig Mach. Co., Oshkosh, Wis.
Wells H. Press Co., Inc., Streator, Ill.
Prima Mfg. Co., Philadelphia, Pa.
The Savage Arms Corp., New York City, N. Y.

Syracuse Washing Mch. Co., Syracuse, N. Y.
Voss Bros. Mfg. Co., Davenport, Iowa.
Whirldry Corp., The, New Haven, Conn.

Water Heaters

Amer. Fdry. & Furnace Co., Bloomington, Ill.
Arthur & Fowler Co., Portland, Ore.
Auto. Elec. Heater Co., Philadelphia, Pa.
Consolidated Elec'l Industries, Inc., Detroit, Mich.
Crane Co., Chicago, Ill.
Edison Elec. Appliance Co., Chicago, Ill.
Electric Heater Corp., Bridgeport, Conn.
Elec. Heating & Mfg. Co., Seattle, Wash.
Ft. Wayne Engr. & Mfg. Co., Ft. Wayne, Ind.
Gas & Elec. Co., La Porte, Ind.
Hynes & Cox Elec. Corp., Albany, N. Y.
Landers, Frary & Clark, New Britain, Conn.
Lang Elec. & Mfg. Co., Kindallville, Ind.
A. J. Lindemann & Hoverson Co., Milwaukee, Wis.
A. Y. McDonald Mfg. Co., Dubuque, Iowa.
McGraw Elec. Co., Omaha, Nebr.
Milwaukee Air Power Pump Co., Milwaukee, Wis.
National Stamping & Elec. Wks., Chicago, Ill.
Philadelphia Elec. & Mfg. Co., Philadelphia, Pa.
Shaw Mfg. Co., Milwaukee, Wis.
The Standard Elec. Stove Co., Toledo, Ohio.
Strauss Mfg. Co., Milwaukee, Wis.
Thermogray Co., Jefferson, Iowa.
Warren Electric Appliance Co., Warren, Pa.
Walker-Pratt Mfg. Co., Boston, Mass.
H. G. Weeks Mfg. Co., Goshen, Ind.
Wesix, Inc., San Francisco, Calif.
Westinghouse Elec. & Mfg. Co., Mansfield, Ohio.

Food Dehydrators

Bussler Distribution Co., New Orleans, La.
E. H. Guthier & Co., Santa Ana, Calif.

Tool Grinders

E. C. Atkins & Co., Indianapolis, Ind.
The Black & Decker Mfg. Co., Towson, Md.
Canedy-Otto Mfg. Co., Chicago-Heights, Ill.
Delta Specialty Co., Milwaukee, Wis.
Paul J. Devitt, Philadelphia, Pa.
Duplex Mill & Mfg. Co., Springfield, Ohio.
The Goodell Pratt Co., Greenfield, Mass.
Hamilton-Beach Mfg. Co., Racine, Wis.
Heston & Anderson, Fairfield, Iowa.
Hill Curtiss Co., Kalamazoo, Mich.
The Hisey-Wolf Mach. Co., New York City, N. Y.
Kornau Machine Co., Cincinnati, Ohio.
Luther, Inc., Milwaukee, Wis.
Mall Tool Co., Chicago, Ill.
Marathan Elec. Mfg. Co., Wausau, Wis.
Master Elec. Co., Dayton, Ohio.
National Elec. Products Co., New York City, N. Y.
The Stanley Rule & Level Plant, New Britain, Conn.
The Van Dorn Elec. Tool Co., Cleveland, Ohio.
Waco Tool Wks., Inc., Chicago, Ill.
I. D. Wallace & Co., Chicago, Ill.
B. A. Wesche Elec. Co., Cincinnati, Ohio

Soldering Irons

Amer. Elec. Heater Co., Detroit, Mich.
Central Flatiron Mfg. Co., Johnson City, N. Y.
Paul J. Devitt, Philadelphia, Pa.
Drake Elec. Wks., Chicago, Ill.
Edison Elec. Appliance Co., Chicago, Ill.
Everhot Mfg. Co., Maywood, Ill.
Landers, Frary & Clark, New Britain, Conn.
Manning Bowman & Co., Meriden, Conn.
White Beauty Elec. Co., Inc., Chicago, Ill.
Wellmade Elec. Co., Torrington, Conn.

General Purpose Motors

Advance Elec. Co., St. Louis, Mo.
Brown-Brockmeyer Co., Dayton, Ohio.
Century Electric Co., St. Louis, Mo.
Challenge Co., Batavia, Ill.
Chicago Flex. Shaft Co., Chicago, Ill.
Crocker-Wheeler Elec. Mfg. Co., Ampere, N. J.
Day Fan Elec. Co., Dayton, Ohio.
Paul J. Devitt, Philadelphia, Pa.
Emerson Elec. Mfg. Co., St. Louis, Mo.
Fairbanks-Morse & Co., Chicago, Ill.
General Elec. Co., Schenectady, N. Y.
Graybar Elec. Co., New York, N. Y.
Hamilton-Beach Mfg. Co., Racine, Wis.
Howell Elec. Motors, Howell, Mich.
Kimble Elec. Co., Chicago, Ill.
Mall Tool Co., Chicago, Ill.
Marathon Elec. Mfg. Co., Wausau, Wis.
Marble-Card Elec. Co., Gladstone, Mich.
Master Elec. Co., Dayton, Ohio.
Superior Elec. Products Co., St. Louis, Mo.
Valley Elec. Co., St. Louis, Mo.
Waco Tool Wks., Inc., Chicago, Ill.
Wagner Elec. Corp., St. Louis, Mo.
Westinghouse Elec. & Mfg. Co., E. Pittsburg, Pa.
B. A. Wesche Elec. Co., Cincinnati, Ohio.

No Voltage Alarms

Brower Mfg. Co., Quincy, Ill.
Lyon Elec. Co., San Diego, Calif.
Merchandise Dept., General Elec. Co., Bridgeport, Conn.
Safeguard Alarm Co., Council Bluffs.
Yaxley Mfg. Co., Chicago, Ill.

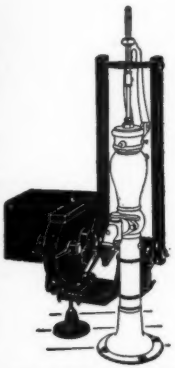
Ice Cream Freezers

Alaska Freezer Co., Inc., Winchendon, Mass.
Cherry-Burrell Corp., Cedar Rapids, Ia.
Cole Mfg. Co., Birmingham, Ala.
Paul J. Devitt, Philadelphia, Pa.
Hoe Corp., Poughkeepsie, N. Y.
Taylor Bros. Churn & Mfg. Co., St. Louis, Mo.

Insect Traps and Fly Screens

Insect Electrocutor Co., Sycamore, Ill.

"MADE EVERY SALE WE COMPETED FOR"



Can be ordered with shaft extension and pulley for running grindstones, etc.

So said a Western dealer of Cullman Electric Pump Drives. The Cullman Drive is completely enclosed—weather proof and fool-proof.

The motor drives through a flexible gear, chain and sprocket power reduction. The Pump Drive can be ordered with a shaft extension and pulley for running grindstones, etc.

If a complete pressure system is desired, the Cullman Automatic Control and Casing Head may be added at any time.

Write for dealers' discounts

CULLMAN WHEEL CO.

1342 Altgeld St. Chicago, Ill.

ELECTRIC PUMP DRIVES — SPEED REDUCERS — SPROCKETS

NOW READY

Three New Series

Universal

Not Connected With Any Other Firm Using the Name "Universal"

ELECTRIC PLANTS

The Flexifour—1½, 3, 4, and 5 KW
The SuperFour—7½ and 10 KW
The Six Cylinder Series—10, 15, and 20 KW

Unprecedented smoothness of operation assured by perfect balance of reciprocating and rotating parts. All units carefully balanced. Full pressure lubrication throughout. All adjustments and repairs facilitated through great accessibility. Available in both marine and standard types. Catalogues upon request.

UNIVERSAL MOTOR COMPANY

202 Harrison Street Oshkosh, Wisconsin

UNIVERSAL ELECTRIC PLANTS

INDEX TO

Electricity on the Farm

Vol. I
July 1927 to Dec. 1928
Inclusive

Yours— for the asking

A COMPLETE index of both Volumes I and II of ELECTRICITY ON THE FARM is now available. Copies will be furnished to any interested upon request.

And why not make it easy to find what you want by keeping each year's issues together in a binder? We have a special one with the words ELECTRICITY ON THE FARM printed in gold ink on the cover. The cost is only $1.50.

Please address your requests either for the free index or the binders to Book Department, Editor, ELECTRICITY ON THE FARM, 24 West 40th St., New York City.

Rural Electrification

(*Continued from page S 5*)

the power Company is recognizing the organized effort of the farmer.

The rural service man should collect all the information available on new devices and be able to figure out definite problems by means of formulæ and tables in order to make a practical installation of an appliance whenever necessary.

Small news items should appear regularly in the local paper telling of interesting happenings in the community that show up rural electrification such as line extensions, new uses for electricity, records of quantity of current used and experiments of various sorts. The local paper will generally print these items if edited in news form. Nothing will take the place of the visit at the farm, if done properly. The visit should be planned with a purpose such as following up and correcting a complaint or checking up on load or introducing new appliances. I find that a call a few days after a new customer has been connected to the line is very greatly appreciated and the customer is in a very receptive mood at this time. This will open the way for later calls.

The customer should be made to feel free to call at the office at any time with his problems and he should always be courteously cared for, no matter how small his problem may be. Indirect suggestion when calling on the farmer will often result in action when direct sales effort will not have any effect. I feel that the rural man should not carry an order blank, as this will create a reserve, rather than a receptive frame of mind on the part of the farmer. After all is said and done, the rural service man simply has to get on the job and keep going and meet whatever situation that arises and work it out to best advantage to the farmer as well as to the Company.

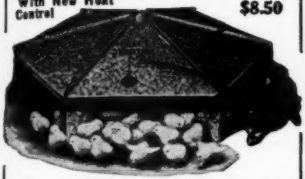
"Tell us, my boy, how you were brave enough to risk your life to save your friend," asked one of the ladies.

"I had to," was the breathless answer. "He had my skates on."

BROWER'S VIOLET LIGHT

BROODER

With New Heat Control $8.50



Brower's Electric "Save-All" fully automatic brooders raise from 10 to 20% more chicks. Less attention, labor, time. Many exclusive features. Galvanized steel, with asbestos-filled, heat-saving lining and metal warmth-deflector. Pilot bulb is violet; heating unit enclosed, guaranteed. Special thermometer. Brower's heat control saves current. Shipped complete with cord, ready for socket. Order direct, if in a hurry, at these prices. State voltage.

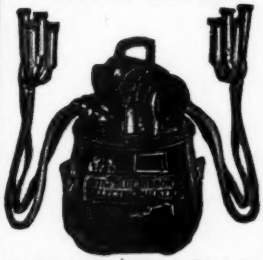
75 day old chick cap.	$ 8.50
125 day old chick cap.	9.75
300 day old chick cap.	13.50
600 day old chick cap.	18.00
1000 day old chick cap.	22.00

Write for BIG CATALOG showing over 350 items including Electric Storage Brooders, Feed Mixers, Alarms, Fountain Heaters, Time Switches, Heating Elements, Automatic Controls, Oat Sprouters, Egg Testers, and Sprayers.

BROWER MFG. CO., Dept. 3538, Quincy, Ill.

DEALERS—Write for proposition.

Blue Ribbon Electric Milker

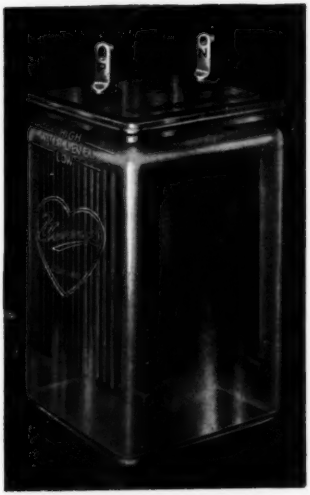


A Portable Milker Requiring No Installation

The "Blue Ribbon" is a self-contained milker, requiring no pipe lines or extra equipment of any kind. It operates direct from the light socket of either high line or farm light plant. A beautiful catalog and complete information will be sent on request. Write us today.

Electric Products Corporation
7 Bluff Ave., La Grange, Ill.

Easy to Sell



to the Farmer

The new **Universal Farm Light Battery** is easy to sell because it has every modern improvement to appeal to the farmer. There are larger jars, extra thick plates, big sediment space, an improved pilot cell, double insulation and many other features.

Many farmers in your locality are prospects for replacement batteries for their light plants. And there is a good profit in selling them.

Let us send you our latest catalog No. 75 F, Free Battery Guide and new price list.

UNIVERSAL BATTERY COMPANY
3414 S. LaSalle Street
CHICAGO, ILL.

Batteries for Every Purse and Purpose

Automobile—Radio—Farm Light Parts for all makes of batteries—Shop Equipment

MONARCH

The new **MON-O-SYSTEM** sets new standard of values in lower price range.

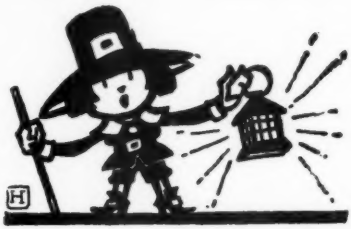
Your opportunity to meet competition on its own ground—offer more for the money.

Monarch standard of excellence in manufacture maintained. Profits not frittered away on service calls.

Cap. 250 gal. per hr.
Oversize tank—20 gal.
—all for only $80.00

The Monarch Engineering Company
Dayton, Ohio

PUMPS AND SYSTEMS



Gone are the Days!

EVERY farmer wants to be through with the oil lantern days. But central station electric service can't be provided many of them for some years.

Are you equipped to sell electric service to these prospects. There is a type of Home Lighting Plant to meet every farmer's requirements. Use the coupon on the inside back cover, listing types on which you'd like data.

A. Engine Driven.
B. Water Wheel Driven.
C. Wind Mill Driven.
D. Storage Batteries for Plants.

This coupon is for your convenience →